QL
521
.G4
FASC. 5

QL
521
.G4
fasc 5

HARVARD UNIVERSITY

VE RI TAS

LIBRARY

OF THE

Museum of Comparative Zoology

4517
/16

GENERAL CATALOGUE
OF THE
HEMIPTERA

W. E. CHINA, *General Editor*
H. M. PARSHLEY, *Managing Editor*

FASCICLE V

POLYCTENIDAE

BY
ROBERT LESLIE USINGER, Ph.D.
University of California, Berkeley

PUBLISHED BY SMITH COLLEGE, NORTHAMPTON, MASS. U. S. A.
1946

GENERAL CATALOGUE
OF THE
HEMIPTERA

W. E. CHINA, *General Editor*
H. M. PARSHLEY, *Managing Editor*

FASCICLE V

POLYCTENIDAE

BY

ROBERT LESLIE USINGER, Ph.D.
University of California, Berkeley

LIBRARY
MUS. COMP. ZOOLOGY
CAMBRIDGE MASS.

PUBLISHED BY SMITH COLLEGE, NORTHAMPTON, MASS., U. S. A.
1946

QL
521
.E4
Ent. 5

Museum of Comparative
Zoology
NOV 4 1946
LIBRARY

EDITORIAL BOARD

H. G. Barber
W. E. China
C. J. Drake
W. D. Funkhouser
H. B. Hungerford
H. H. Knight
Z. P. Metcalf
P. W. Oman
H. M. Parshley
J. R. de la Torre-Bueno
R. L. Usinger

FASCICLE V

POLYCTENIDAE

BY

ROBERT LESLIE USINGER

INTRODUCTION

The family Polyctenidae comprises a small assemblage of ectoparasites of bats. It is comparable in number of species to such small families as the Leptopodidae and Mesoveliidae but individuals are less common than in either of these semiaquatic groups, less than one hundred specimens of the family having been accumulated in the insect collections of the world. However, a fairly wide sampling of geographical areas has been achieved. It still remains for a hemipterist particularly interested in these bugs to collect and observe them alive in the field. Despite this lack of biological information and despite the small sampling and absence of positive knowledge as to the limits of variability, host specificity and related matters, a rather large fund of information has been accumulated. Out of this has emerged a remarkably complete picture of this unique group of Hemiptera.

History. First described by Giglioli in 1864, *Polyctenes molossus* was placed in the dipterous family Nycteribiidae. The name was originally suggested to Giglioli by J. O. Westwood who followed, ten years later, with a monumental work in which he proposed the family Polyctenidae and referred it to the order Anoplura. Waterhouse soon transferred the group back to the Diptera and then, one year later, first suggested its hemipterous affinities. It was left in the Diptera, however, for the next twenty-four years until Speiser reviewed its systematic position in 1904 and placed it near the bed bugs where it remains to this day.

By this time much confusion had crept into the literature because of the failure of entomologists to recognize the immature forms. Kirkaldy brought order out of the chaos in 1906 with a very brief but sound classification of the group into four genera. Horváth then became interested in the group and described several genera and species, most of which proved to be synonyms.

The modern era in Polyctenid systematics really began with Jordan's comprehensive review of the old world species in 1911. Jordan used the microscopic technique developed in the course of his studies on fleas and other ectoparasites. In a series of papers he did much to clear up doubtful forms and made known several exceedingly interesting new genera and species. It was Jordan who first suggested the remarkable type of viviparous reproduction which Hagen (1931) studied so thoroughly. Contributions by Ferris, Schwenck, and a catalogue by da Costa Lima (1920) practically completed work on the group until the monograph by Ferris and Usinger in 1939. This last work was prompted by the accumulation of more material than had ever been assembled before and was greatly facilitated by the cooperation of hemipterists and parasitologists in various parts of the world.

The result was a systematic, bibliographical, and morphological revision of the family with illustrations of all of the known species.

Adaptations to an ectoparasitic life. Polyctenids resemble ectoparasitic Diptera of the family Nycteribiidae in general appearance. Among the special adaptations for a life amidst the fur of mammals may be mentioned the ctenidia, absence of eyes and ocelli, flattened body form, reduction of wings to mere paranotal pads, enlargement and occasional asymmetry of claws, and an entirely unique combination of paedogenesis and "pseudo-placento" viviparity analogous to that of African earwigs of the genus *Hemimerus* which live as ectoparasites on rats of the genus *Cricetomys.* Although these characters immediately set the Polyctenidae apart from all other Hemiptera it must be remembered that the extreme specialization seen in the Polyctenids, Platypsyllid beetles, fleas, lice, and pupiparous Diptera has directed certain characters along parallel lines resulting in this superficial but striking convergence.

Systematic position. In fundamental characters there is little doubt that the Polyctenidae belong near the Cimicidae and Anthocoridae in the great superfamily Cimicoidea. They scarcely conform to Reuter's superfamily diagnosis but the number and arrangement of scent glands and the strikingly asymmetrical male genitalia are identical with those of the Cimicids and Anthocorids, trichobothria are absent in the entire group, and other characters such as the ovipositor of certain Anthocorids and the organ of Berlese of female Cimicids occur only sporadically in the Cimicoidea. The antennal segmentation is correct for the Cimicoidea and the first rostral segment is reduced as in Anthocorids but may be seen in some forms and indicates an original four-segmented condition. Most peculiar are the apparently four-segmented tarsi in contrast to the typically three-segmented condition in most other Hemiptera with occasional reductions to two or one-segmented tarsi.

Geographical distribution and host relationships. Distributional and host data were assembled in 1939 by Ferris and Usinger but their interpretation was hampered for want of a clear exposition of the phylogenetic relationships of bats. Since that time a very lucid book entitled "Bats" has appeared from the pen of an authority on these animals, G. M. Allen. Facts gleaned from this book go far toward solving the perplexing problems in Polyctenid distribution.

The new world Polyctenidae (Table I) are sharply distinguished from their old world relatives, belonging to the single, compact, and relatively slightly modified genus *Hesperoctenes.* Species of this genus have been found, with but a single exception, on bats of the family Molossidae and all except two of the parasite species have thus far been recorded from but a single species of bat. In striking contrast to this, the old world Polyctenidae fall into several very distinct genera, all relatively highly modified for an ectoparasitic existence. Furthermore the genus *Eoctenes*, at least, exhibits a remarkably catholicity of taste as to hosts and an even greater discontinuity of geographical distribution. It should further be noted that no Polyctenid has yet been reported from a bat of the family Vespertilionidae.

TABLE I

Systematic Arrangement of the Polyctenidae with a Summary of Host and Distributional Records

Polyctenidae	*Bats*	*General Locality*
	Old World Records	
Adroctenes horvathi Jordan	*Rhinolophus eloquens* Anderson	E. Africa
Eoctenes intermedius (Speiser)	*Taphozous perforatus* Geoffroy	Egypt
	Taphozous cavaticus Hollister	Sumatra
Eoctenes nycteridis (Horváth)	*Nycteris hispida* Schreber	E. Africa
	Petalia arge (Thomas)	Liberia
Eoctenes spasmae (Waterhouse)	*Megaderma carimatae* Miller	Karimata I.
	Megaderma spasma (Linnaeus)	Java, Nais I.
	Megaderma s. ceylonicus Anderson	Ceylon
	Cynopterus brachyotis Muller	Borneo
	Cynopterus marginatus (Geoffroy)	India
Hypoctenes clarus Jordan	*Mops thersites* (Thomas)	W. Africa
Polyctenes molossus Giglioli	*?Nyctinomus cestonii* (Savi)	China
	Lyraderma lyra Geoffroy	India
	New World Records	
Hesperoctenes angustatus Ferris and Usinger	*Eumops glaucinus* Wagner	Panama
Hesperoctenes cartus Jordan	*Tadarida gracilis* (Wagner)	Brazil
Hesperoctenes eumops Ferris and Usinger	*Eumops californicus* (Merriam)	California
	Molossus perotis Wied.	Brazil
Hesperoctenes fumarius (Westwood)	*Molossus fumarius* Burmeister	Jamaica
	Molossus tropidorhynchus Gray	Cuba
Hesperoctenes fumarius? Schwenck	*Artibeus perspicillatus* Linnaeus	Brazil
Hesperoctenes hermsi Ferris and Usinger	*Tadarida macrotis* Gray	Texas
Hesperoctenes impressus Horváth	*?Molossus cerastes* Thomas	Paraguay
Hesperoctenes limai Ferris and Usinger	Not recorded	Brazil
Hesperoctenes longiceps (Waterh.)	*Molossus abrasus* (Temminck)	Guatemala
Hesperoctenes parvulus Ferris and Usinger	*Glossophaga longirostris* Miller	Venezuela
Hesperoctenes setosus Jordan	*Molossus* sp.	Venezuela
Hesperoctenes tarsalis Horváth	Not recorded	Nicaragua
Hesperoctenes vicinus Jordan	*?Molossus rufus* Geoffroy	Paraguay

Inasmuch as this is one of the oldest and largest families of bats, such negative evidence may be of more than usual significance.

Table I has been changed in certain details from Ferris and Usinger (1939) to conform to Allen's views. Thus the host of *Polyctenes molossus* is assumed to have been a *Nyctinomus* rather than a *Molossus* as originally reported because we are told that *Molossus* is a new world genus and is replaced in the old world by *Nyctinomus*. Even more changes will be noted in Table II which summarizes the most recent views on the systematic position of the bats. It becomes evident that bats are not evenly distributed over the land areas of the earth. Of the seventeen families of Chiroptera, eight are confined to the old world, six are confined to the new world, and only three are common to both hemispheres. Moreover, of the three ubiquitous families, only the Vespertilionidae contains genera common to both hemispheres and this common family has never been recorded as the host for any Polyctenid. Here, then, is a basis for the isolation of the old from the new world Polyctenidae.

TABLE II

Systematic Arrangement of the Hosts of Polyctenidae

OLD WORLD

- Family Nycteridae (Hollow-faced Bats)
  - *Nycteris hispida* Schreber
- Family Megadermidae (False vampire bats)
  - *Megaderma carimatae* Miller
  - *Megaderma spasmae* (Linnaeus)
  - *Megaderma s. ceylonicus* Anderson
  - *Lyraderma lyra* (Geoffroy)
- Family Rhinolophidae (Horse-shoe bats)
  - *Rhinolophus eloquens* Anderson
- Family Emballonuridae (Sheath-tailed bats)
  - *Taphozous cavaticus* (Hollister)
  - *Taphozous perforatus* Geoffroy
- Family Molossidae (Free-tailed bats)
  - *Nyctinomus cestonii* (Savi)
  - *Mops thersites* (Thomas)
- Family Pteropidae (Fruit-eating bats)
  - *Cynopterus brachyotis* Muller
  - *Cynopteris marginatus* Geoffroy

NEW WORLD

- Family Phyllostomidae (Leaf-nosed Bats)
  - *Artibeus perspicillatus* Linnaeus
  - *Glossophaga longirostris* Miller
- Family Molossidae (Free-tailed bats)
  - *Molossus cerastes* Thomas
  - *Molossus fumarius* Burmeister
  - *Molossus rufus* Geoffroy
  - *Molossus perotis* Wied.
  - *Molossus tropidorhynchus* Gray
  - *Eumops abrasus* (Temminck)
  - *Eumops californicus* (Merriam)
  - *Eumops glaucinus* Wagner
  - *Tadarida macrotis* (Gray)
  - *Tadarida gracilis* (Wagner)

Origin and evolution of the Polyctenidae. Allen suggests that the center of distribution and perhaps the original home of the Chiroptera is the region surrounding the Indian Ocean. Ferris reached the same conclusion quite independently for the Nycteribiids and, as mentioned above, the most diverse and highly specialized Polyctenids occur in this region today. It would appear, then, that the primitive American *Hesperoctenes* became isolated from the main Polyctenid stock very early at a time when warmer temperatures permitted the Molossidae to migrate between the old and the new worlds. This route was later closed, leaving the American stock to develop its distinct but very closely allied species. Meanwhile, evolution was proceeding apace in the old world fauna with its potentialities for great diversity. Relatively primitive *Hypoctenes* and *Adroctenes* evolved a few special features in the Ethiopian Realm after which the widespread oriental genus *Eoctenes* invaded the Dark Continent. At least in the case of *Polyctenes* and *Eoctenes*, a wide variety of bat hosts were attacked, thus greatly facilitating their widespread distribution.

Form of the catalogue. In accordance with the policy of this catalogue the genera have been arranged as naturally as a serial order permits and the species have been listed alphabetically within each genus. The genera are arranged in descending order from the most specialized genus, *Eoctenes*, to the most generalized genus, *Hesperoctenes*. The terminology of genotypes is after Cook (1914). All references of a systematic nature that have been noticed are included, even though the name is merely listed in a catalogue. Textbook references have been omitted, however, because they were found to be obvious repetition of original works quoted herein.

Acknowledgments. It is a pleasure to again acknowledge the assistance of W. E. China, H. G. Barber, J. Bequaert, A. Borell, O. H. Swezey, and W. B. Herms who so generously helped in the preparation of the 1939 revision. Robert Matheson, A. da Costa Lima, and Pablo Anduze have since provided valuable material.

Family **POLYCTENIDAE** Westwood

Polyctenidae	1874	Westwood, Thes. Ent. Oxon. 197–199, pls. 38–40.
	1879	Waterhouse, Trans. Ent. Soc. Lond. 309–312, Tab. IX.
	1880	Waterhouse, Trans. Ent. Soc. Lond. 319–320, Tab. IX.
	1892	Bigot, Jour. Asiatic Soc. Bengal, 61 (2): 235. [Cat.]
	1896	Van der Wulp, Cat. Diptera South Asia, 208. [Cat.]
	1899	Sharp, Cambridge Natural History, **6**: 561.
	1904	Speiser, Zool. Jahrb., Suppl. **7**: 373–380, 6 figs. [Phylogeny]
	1906	Distant, Fauna Brit. India, Rhynch. **3**: 11–12, fig. 10.
	1906	Kirkaldy, Canad. Ent. **38**: 369–376. [Class.]
	1906	Kirkaldy, Trans. Amer. Ent. Soc. **32**: 147. [List]
	1909	Speiser, Rec. Indian Mus. **3**: 271–274. [Review]
	1909	Oshanin, Verz. palaeark. Hemip. **1**: 612. [Cat.]
	1911	Horváth, Mém. Congr. Int. d'Ent., Bruxelles, **2**: 249–256, pl. 18.
	1911	Jordan, Proc. Ent. Soc. Lond. p. lxiv. [Viviparity]
	1912	Jordan, Novitates Zoologicae, **18**: 555–579, pls. 12–14.
	1912	Reuter, Öfv. Finska Vet.-Soc. Förh. 54, Afd. A, No. 6, 1–62.
	1912	Oshanin, Kat. pal. Hemip. pp. xvi+187. [Cat.]
	1913	Jordan, Trans. 2nd Int. Congr. Ent. Oxford, **2**: 342–350.
	1920	Costa Lima, Arch. Esc. Sup. Agric. Med. vet. Nictheroy, **4**: 61–76, pl. 17.
	1922	Jordan, Ectoparasites, **1**: 204–215, figs. 199–208.
	1922	Jordan, Ectoparasites, **1**: 284–286, figs. 276–280. [Morph.]
	1931	Stiles and Nolan, Bull. Nat. Inst. Health, **155**: 642–643. [Cat.]
	1931	Hagen, Jour. Morph. Physiol. **51**: 1–92, 58 figs. [Embryol.]
	1935	Wu, Cat. Insect. Sinensium, **2**: 485. [Cat.]
	1939	Ferris and Usinger, Microent. **4**: 1–50, 25 figs. [Monogr.]
	1940	Costa Lima, Insetos do Brasil, **2**: 239–242.
	1945	Ferris and Usinger, Pan-Pac. Ent. **21**: 121–124.

Genus **EOCTENES** Kirkaldy

Orthotype *Polyctenes spasmae* Waterhouse

Eoctenes	1906	Kirkaldy, Canad. Ent. **38**: 375.
Polyctenes	1909	Speiser, Rec. Indian Mus. **3**: 272–274. [Partim]
	1909	Oshanin, Verz. pal. Hemip. **1**: 612. [Partim]
Eoctenes	1910	Kellogg and Paine, Ent. News, **21**: 401–403, pl. 13.
Ctenoplax	1910	Horváth, Ann. Mus. Nat. Hungarici, **8**: 572. (Haplotype, nycteridis Horváth.)
Syncrotus	1910	Horváth, Ann. Mus. Nat. Hungarici, **8**: 573. (Non *Syncrotus* Bergroth, 1895) (logotype *talpa* Speiser = *spasmae* Waterhouse.)
Eoctenes	1910	Horváth, Ann. Mus. Nat. Hungarici, **8**: 574.
	1911	Horváth, Mém. Congr. Int. d'Ent., **2**: 251.
Ctenoplax	1911	Horváth, Mém. Congr. Int. d'Ent., **2**: 251.
	1911	Horváth, Math. Termés. Ért. **29**: 103.
Hemischizus	1911	Horváth, Ann. Mus. Nat. Hungarici, **9**: 336. (n. n. pro *Syncrotus* Horváth) (logotype *talpa* Speiser = *spasmae* Waterhouse.)
	1911	Horváth, Mém. Congr. Int. d'Ent. **2**: 251.
Eoctenes	1912	Jordan, Novitates Zoologicae, **18**: 571–575.
Hemischizus	1912	Oshanin, Kat. pal. Hemip. 56.
Eoctenes	1920	Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 66–68.
	1922	Jordan, Ectoparasites, **1**: 204.
	1939	Ferris and Usinger, Microent. **4**: 13–15, figs. 3, 4, 5, 7–10.

eknomius Kellogg and Paine 1910. See *Eoctenes intermedius* (Speiser).

intermedius (Speiser)

1904 *Polyctenes intermedius* Speiser, Zool. Jahrb. Suppl. **7**: 373–375, pl. XX, figs. 1–2.[1]
1909 *Polyctenes intermedius* Speiser, Rec. Indian Mus. **3**: 272. [Cat.]
1909 *Polyctenes intermedius*, Oshanin, Verz. pal. Hemip. **1**: 612.
1910 *Syncrotus intermedius*, Horváth, Ann. Mus. Nat. Hungarici, **8**: 573.
1910 *Eoctenes eknomius* Kellogg and Paine, Ent. News, **21**: 402–403, pl. XIII.[2]
1910 *Syncrotus eknomius*, Horváth, Ann. Mus. Nat. Hungarici, **8**: 574.
1911 *Hemischizus intermedius*, Horváth, Mém. Congr. Int. d'Ent. **2**: 251. [Adapt.]
1911 *Hemischizus eknomius*, Horváth, Mém. Congr. Int. d'Ent. **2**: 251.
1912 *Hemischizus intermedius*, Oshanin, Kat. pal. Hemip. 56.
1912 *Eoctenes intermedius*, Jordan, Novitates Zoologicae, **18**: 574, pl. XIII, fig. 9. [*Eknomius* synon.]
1919 *Eoctenes intermedius*, Ferris, Jour. New York Ent. Soc. **27**: 262–263.[3]
1920 *Eoctenes intermedius*, Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 67–68.
1939 *Eoctenes intermedius*, Ferris and Usinger, Microent. **4**: 14, fig. 7.

Egypt
Taphozous perforatus[1]
Khartoum, Sudan[2]
Tarussan Bay, Sumatra
Taphozous cavaticus[3]

nycteridis (Horváth)

1910 *Ctenoplax nycteridis* Horváth, Ann. Mus. Nat. Hungarici, **8**: 572–573, pl. XIV, figs. 2–5.[1]
1911 *Ctenoplax nycteridis* Horváth, Mém. Congr. Int. d'Ent. **2**: 251.
1911 *Ctenoplax nycteridis* Horváth, Math. Termés. Ért. **29**: 103, fig. 2.
1912 *Eoctenes nycteridis*, Jordan, Novitates Zoologicae, **18**: 575–576, pl. 13, figs. 5–8.[2] [New combination.]
1913 *Eoctenes nycteridis*, Jordan, Trans. 2nd Int. Congr. Ent. **2**: 343–347, fig. 9.
1920 *Eoctenes nycteridis*, Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 68.
1930 *Eoctenes nycteridis*, Ferris, in Strong, Afr. Rep. Liberia, **2**: 1022, fig. 12.[3]
1939 *Eoctenes nycteridis*, Ferris and Usinger, Microent. **4**: 14–15, figs. 8–9.

Shirati, Lake Victoria
Nycteris hispida[1]
Moffat Road Entebbe, Uganda[2]
Du River, Liberia
Petalia arge[3]

spasmae (Waterhouse)

1879 *Polyctenes spasmae* Waterhouse, Trans. Ent. Soc. Lond. 312, figs. 3–4.[1]
1892 *Polyctenes spasmae*, Bigot, Jour. Asiatic Soc. Bengal, **61**: 235.
1896 *Polyctenes spasmae*, Van der Wulp, Cat. Diptera Asia, 208.
1898 *Polyctenes talpa* Speiser, Zool. Anz. **21**: 614, fig.[2]
1904 *Polyctenes spasmae*, Speiser, Zool. Jahrb. Suppl. **7**: 376, pl. 20, figs. 3, 4, 5.
1906 *Eoctenes spasmae*, Kirkaldy, Canad. Ent. **38**: 375. [New comb.]
1909 *Polyctenes spasmae*, Speiser, Rec. Ind. Mus. **3**: 272–273.
1909 *Polyctenes talpa* Speiser, Rec. Ind. Mus. **3**: 272.[3]
1910 *Polyctenes talpa*, Distant, Fauna Brit. India, Rhynch. **5**: 309–310.
1910 *Syncrotus talpa*, Horváth, Ann. Mus. Nat. Hungarici, **8**: 573.
1911 *Eoctenes spasmae*, Horváth, Mém. Congr. Int. d'Ent. **2**: 251.
1911 *Hemischizus talpa*, Horváth, Mém. Congr. Int. d'Ent. **2**: 251.
1911 *Polyctenes spasmae*, Jordan, Proc. Ent. Soc. Lond. p. lxiv. [*Talpa* synon.]
1912 *Eoctenes spasmae*, Jordan, Novitates Zoologicae, 18: 574.
1913 *Eoctenes spasmae*, Jordan, Trans. 2nd Int. Congr. Ent. **2**: 342. [Viviparity.]

Java,
Megaderma spasma[1]
Island of Nias[2]
Trivandrum Travancore India
Cynopterus marginatus[3]
Karimata I.
Megaderma carimatae[4]
Borneo
Cynopterus brachyotis[5]
Ceylon
Megaderma spasma ceylonense[6]

1919 *Eoctenes spasmae,* Ferris, Jour. New York Ent. Soc. **27**: 262.[4]
1920 *Eoctenes spasmae,* Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 66–67.
1924 *Polyctenes sp.,* Phillips, Spolia Zeylanica, **13**: 70.[6]
1926 *Eoctenes spasmae,* Horváth, Treubia, **8**: 381–382.[5]
1939 *Eoctenes spasmae,* Ferris and Usinger, Microent. **4**: 15, fig. 10.

talpa (Speiser) 1898. See *Eoctenes spasmae* (Waterhouse).

Genus SYNCROTUS Horváth

(Synonym of *Eoctenes* Kirkaldy, q. v.)

Haplotype *Polyctenes talpa* Speiser [= *Eoctenes spasmae* Waterhouse]

Syncrotus 1910 Horváth, Ann. Mus. Nat. Hungarici, **8**: 572. [Non *Syncrotus* Bergroth, 1895.]

eknomius (Kellogg and Paine) 1910. See *Eoctenes intermedius* (Speiser).

intermedius (Speiser) 1904. See *Eoctenes intermedius* (Speiser).

talpa (Speiser) 1898. See *Eoctenes spasmae* (Waterhouse).

Genus HEMISCHIZUS Horváth

(Synonym of *Eoctenes* Kirkaldy, q. v.)

Haplotype *Polyctenes talpa* Speiser. (= *Eoctenes spasmae* Waterhouse.)

Hemischizus 1911 Horváth, Ann. Mus. Nat. Hungarici, **9**: 336. [n. n. pro *Syncrotus* Horváth non Bergroth.]

eknomius (Kellogg and Paine) 1910. See *Eoctenes intermedius* (Speiser).

intermedius (Speiser) 1904. See *Eoctenes intermedius* (Speiser).

talpa (Speiser) 1898. See *Eoctenes spasmae* (Waterhouse).

Genus CTENOPLAX Horváth

(Synonym of *Eoctenes* Kirkaldy, q. v.)

Haplotype *Ctenoplax nycteridis* Horváth

Ctenoplax 1910 Horváth, Ann. Mus. Nat. Hungarici, **8**: 572.

nycteridis Horváth 1910. See *Eoctenes nycteridis* (Horváth).

Genus POLYCTENES Giglioli

Haplotype *Polyctenes molossus* Giglioli

Polyctenes 1864 Giglioli, Quart. Jour. Micr. Sci. (n.s.) **4**: 18–26, pl. 1B, figs. 13–14.
1874 Westwood, Thes. Ent. Oxon. 198, pls. 38–40.
1879 Waterhouse, Trans. Ent. Soc. Lond. 309, pl. IX.
1892 Bigot, Jour. Asiatic Soc. Bengal, **61** (2): 235.
1896 Van der Wulp, Cat. Diptera Asia, 208 [Cat.]
1904 Speiser, Zool. Jahrb. Suppl. **7**: 373.
1906 Kirkaldy, Canad. Ent. **38**: 375.
Euroctenes 1906 Kirkaldy, Canad. Ent. **38**: 375. (Logotype *lyrae* Waterhouse = *molossus* Giglioli.)
Polyctenes 1910 Horváth, Ann. Mus. Nat. Hungarici, **8**: 573. (*Euroctenes* synon.)
1911 Horváth, Mém. Congr. Int. d'Ent. **2**: 251.
1912 Jordan, Novitates Zoologicae, **18**: 567.
1920 Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 65.
1922 Jordan, Ectoparasites, **1**: 204.
1935 Wu, Cat. Insect. Sinensium, **2**: 485.
1939 Ferris and Usinger, Microent. **4**: 15–16, fig. 11.

lyrae Waterhouse 1879. See *Polyctenes molossus* Giglioli.

molossus Giglioli

1864 *Polyctenes molossus* Giglioli, Quart. Jour. Micro. Sci. (n.s.) **4**: 18– Amoy, China
26, pl. 1B, figs. 13–14.[1] *Molossus*[1]
1874 *Polyctenes molossus*, Westwood, Thes. Ent. Oxon. 198, pl. 39, figs. Secunderabad
A, B; pl. 40, figs. A–E. India
1879 *Polyctenes lyrae* Waterhouse, Trans. Ent. Soc. Lond. 311, pl. IX, *Megaderma*
figs. 1–2.[2] *lyra*[2]
1892 *Polyctenes lyrae*, Bigot, Jour. Asiatic Soc. Bengal, **61**: 235. [Cat.] China[3]
1896 *Polyctenes molossus*, Van der Wulp, Cat. Diptera Asia, 208. [Cat.]
1896 *Polyctenes lyrae*, Van der Wulp, Cat. Diptera Asia, 208. [Cat.]
1898 *Polyctenes molossus*, Speiser, Zool. Anz. **21**: 614.
1904 *Polyctenes molossus*, Speiser, Zool. Jahrb. Suppl. **7**: 375.
1906 *Polyctenes molossus*, Kirkaldy, Canad. Ent. **38**: 375.
1906 *Euroctenes lyrae*, Kirkaldy, Canad. Ent. **38**: 375.
1906 *Polyctenes lyrae*, Distant, Fauna Brit. India, Rhynch. **3**: 12, fig. 10.
1909 *Polyctenes molossus*, Speiser, Rec. Indian Mus. **3**: 272.
1909 *Polyctenes lyrae*, Speiser, Rec. Indian Mus. **3**: 272.
1911 *Polyctenes molossus*, Horváth, Mém. Congr. Int. d'Ent. **2**: 251.
1911 *Polyctenes lyrae*, Horváth, Mém. Congr. Int. d'Ent. **2**: 251.
1912 *Polyctenes molossus*, Jordan, Novitates Zoologicae, **18**: 569, pl. XII, figs. 1–4.[3]
[*Lyrae* synon.]
1920 *Polyctenes molossus*, Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 65–66.
1935 *Polyctenes molossus*, Wu, Cat. Insect. Sinensium, **2**: 485.
1939 *Polyctenes molossus*, Ferris and Usinger, Microent. **4**: 15–16, fig. 11.

Genus **EUROCTENES** Kirkaldy

(Synonym of *Polyctenes* Kirkaldy, q. v.)

Haplotype *Polyctenes lyrae* Waterhouse [= *Polyctenes molossus* Giglioli]

Euroctenes 1906 Kirkaldy, Canad. Ent. **38**: 375.
lyrae (Waterhouse) 1879. See *Polyctenes molossus* Giglioli.

Genus **ADROCTENES** Jordan

Haplotype *Adroctenes horvathi* Jordan

Adroctenes 1912 Jordan, Novitates Zoologicae, **18**: 576.
1920 Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 69.
1922 Jordan, Ectoparasites, **1**: 199.
1922 Jordan, Ectoparasites, **1**: 204.
1939 Ferris and Usinger, Microent. **4**: 16, fig. 12.

horvathi Jordan

1912 *Adroctenes horvathi* Jordan, Novitates Zoologicae, **18**: 577–579, Upper Sheika,
pl. XIV.[1] British
1920 *Adroctenes horvathi*, Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. Somaliland[1]
4: 69. Mt. Elgon,
1939 *Adroctenes horvathi*, Ferris and Usinger, Microent. **4**: 16, fig. 12.[2] Kenya
Rhinolophus
eloquens[2]

Genus HYPOCTENES Jordan

Haplotype *Hypoctenes clarus* Jordan

Hypoctenes 1922 Jordan, Ectoparasites, **1**: 199–203.
1922 Jordan, Ectoparasites, **1**: 204.
1939 Ferris and Usinger, Microent. **4**: 16, fig. 13.

clarus Jordan

1922 *Hypoctenes clarus* Jordan, Ectoparasites, **1**: 199–203, figs. 195–198.[1]
1939 *Hypoctenes clarus*, Ferris and Usinger, Microent. **4**: 16, fig. 13.

Efulen, Cameroons, Africa.
Mops thersites[1]

Genus HESPEROCTENES Kirkaldy

Logotype *Polyctenes fumarius* Westwood

Hesperoctenes 1906 Kirkaldy, Canad. Ent. **38**: 375.
1910 Horváth, Ann. Mus. Nat. Hungarici, **8**: 573.
1911 Horváth, Mém. Congr. Int. d'Ent. **2**: 251.
1912 Jordan, Novitates Zoologicae, **18**: 566.
1920 Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 69–74.
1922 Jordan, Ectoparasites, **1**: 199.
1922 Jordan, Ectoparasites, **1**: 204–215.
1939 Ferris and Usinger, Microent. **4**: 17–23.
1945 Ferris and Usinger, Pan-Pac. Ent. **21**: 121–124.

angustatus Ferris and Usinger

1939 *Hesperoctenes angustatus* Ferris and Usinger, Microent. **4**: 18–19, figs. 14–15.[1]

Bartica, Brit. Guiana
Panama City
Eumops glaucinus[1]

cartus Jordan

1908 *Polyctenes sp.* Barber, Proc. Ent. Soc. Wash. **9**: 11–12. [Exhibit.]
1922 *Hesperoctenes cartus* Jordan, Ectoparasites, **1**: 211–212, figs. 203–204.[1]
1939 *Hesperoctenes cartus*, Ferris and Usinger, Microent. **4**: 19, figs. 14, 16.[2]

Joinville, Sta. Catharina Brazil
Tadarida gracilis[1]
Sapucay, Paraguay
Molossus cerastes[2]

eumops Ferris and Usinger

1919 *Hesperoctenes longiceps*, Ferris, Jour. New York Ent. Soc. **27**: 261–262, pl. XXIV.[1]
1920 *Hesperoctenes fumarius*, Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 61, 64.[2]
1922 *Hesperoctenes longiceps*, Jordan, Ectoparasites, **1**: 214–215. (Fig. 208 partim.)
1939 *Hesperoctenes eumops* Ferris and Usinger, Microent. **4**: 19–20, figs. 14, 17, 18.

California
Eumops californicus[1]
State of Rio, Brazil
Molossus perotis[2,3]

1939 *Hesperoctenes species*, Ferris and Usinger, Microent. **4**: 22.
1940 *Hesperoctenes fumarius?*, Costa Lima, Insetos do Brasil, **2**: 239–240.
1945 *Hesperoctenes eumops* Ferris and Usinger, Pan-Pac. Ent. **21**: 122.[3]

fumarius (Westwood)

1874 *Polyctenes fumarius* Westwood, Thes. Ent. Oxon. 198, pl. 38.[1]
1880 *Polyctenes fumarius*, Waterhouse, Trans. Ent. Soc. Lond. 319.
1904 *Polyctenes fumarius*, Speiser, Zool. Jahrb. Suppl. **7**: 376.
1906 *Hesperoctenes fumarius*, Kirkaldy, Canad. Ent. **38**: 375.
1909 *Polyctenes fumarius*, Speiser, Rec. Indian Mus. **3**: 272.
1910 *Hesperoctenes fumarius*, Horváth, Ann. Mus. Nat. Hungarici, **8**: 572.
1911 *Hesperoctenes fumarius*, Horváth, Mém. Congr. Int. d'Ent. **2**: 336.
1911 *Hesperoctenes fumarius*, Horváth, Ann. Mus. Nat. Hungarici, **9**: 336.
1920 *Hesperoctenes fumarius*, Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 69. [Partim.]
1922 *Hesperoctenes fumarius*, Jordan, Ectoparasites, **1**: 212–213, fig. 205.
1928 *Hesperoctenes tarsalis*, Matheson, Parasitology, **20**: 174.[2]
1931 *Hesperoctenes fumarius*, Hagen, Jour. Morph. Physiol. **51**: 1–92, 59 figs.[3]
1935 *Hesperoctenes fumarius*, Schwenck, Ann. Fac. Med. Univ. Sao Paulo, **11**: 37–42, 2 figs.
1939 *Hesperoctenes fumarius*, Ferris and Usinger, Microent. **4**: 20, figs. 14, 19.[4]
1945 *Hesperoctenes fumarius*, Ferris and Usinger, Pan-Pac. Ent. **21**: 122.[5]

Jamaica
Molossus fumarius[1]
Costa Rica[5]
Tadarina[2]
Havana, Cuba[3]
Mantanzas, Cuba
Molossus tropidorhynchus[4,5]
Vieques I.[4]
Aquadilla, Puerto Rico[4]

hermsi Ferris and Usinger

1939 *Hesperoctenes hermsi* Ferris and Usinger, Microent. **4**: 20–21, figs. 14, 20.[1]

Texas
Tadarida macrotis[1]

impressus Horváth

1910 *Hesperoctenes impressus* Horváth, Ann. Mus. Nat. Hungarici, **8**: 571–572, pl. XIV, fig. 1.[1]
1911 *Hesperoctenes impressus* Horváth, Mém. Congr. Int. d'Ent. **2**: 251.
1911 *Hesperoctenes impressus* Horváth, Math. Termés. Ért. **29**: 103, fig. 1.
1913 *Hesperoctenes impressus*, Jordan, Trans. 2nd Int. Congr. Ent. **2**: 347–349, figs. 10, 11.
1920 *Hesperoctenes fumarius*, Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 70–71. [Partim.]
1922 *Hesperoctenes fumarius impressus*, Jordan, Ectoparasites, **1**: 214, figs. 206–207. [Subsp.][2]
1939 *Hesperoctenes impressus*, Ferris and Usinger, Microent. **4**: 21, figs. 14, 21.[3]
1940 *Hesperoctenes impressus*, Costa Lima, Insetos do Brasil, **2**: 239–241, fig. 407.

Blumenau, Brazil[1]
Sapucay, Paraguay[2]
Molossus ?cerastes[3]

limai Ferris and Usinger

1945 *Hesperoctenes limai* Ferris and Usinger, Pan-Pac. Ent. **21**: 123.[1]

Lassance and Bahia, Brazil[1]

longiceps (Waterhouse)

1880 *Polyctenes longiceps* Waterhouse, Trans. Ent. Soc. Lond. 319.[1]
1904 *Polyctenes longiceps*, Speiser, Zool. Jahrb. Suppl. **7**: 376.

Cajaban, Guatemala

1909 *Polyctenes longiceps*, Speiser, Rec. Indian Mus. **3**: 272. — *Molossus abrasus*[1]
1911 *Hesperoctenes longiceps*, Horváth, Mém. Congr. Int. d'Ent. **2**: 251.
1920 *Hesperoctenes longiceps*, Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 69–70.
1922 *Hesperoctenes longiceps*, Jordan, Ectoparasites, **1**: 214–215, fig. 208.
1939 *Hesperoctenes longiceps*, Ferris and Usinger, Microent. **4**: 22, fig. 22.

parvulus Ferris and Usinger

1945 *Hesperoctenes parvulus* Ferris and Usinger, Pan-Pac. Ent. **21**: 123.[1] — Venezuela *Glossophaga longirostris*[1]

setosus Jordan

1922 *Hesperoctenes setosus* Jordan, Ectoparasites, **1**: 208–209, figs. 199–200.[1] — Venezuela, *Nyctinomus*[1]
1939 *Hesperoctenes setosus*, Ferris and Usinger, Microent. **4**: 22, figs. 14, 23.

tarsalis Horváth

1911 *Hesperoctenes tarsalis* Horváth, Ann. Mus. Nat. Hungarici, **9**: 336, pl. IX, figs. 3–5.[1] — Nicaragua[1]
1920 *Hesperoctenes fumarius*, Costa Lima, Arch. Esc. Sup. Agric. Med. Vet. **4**: 70, 71. [Partim.]
1922 *Hesperoctenes fumarius tarsalis*, Jordan, Ectoparasites, **1**: 213–214. [Subsp.]
1939 *Hesperoctenes tarsalis*, Ferris and Usinger, Microent. **4**: 22.

vicinus Jordan

1922 *Hesperoctenes vicinus* Jordan, Ectoparasites, **1**: 210–211, figs. 201–202.[1] — Sapucay, Paraguay *Molossus rufu*
1939 *Hesperoctenes vicinus*, Ferris and Usinger, Microent. **4**: 22, figs. 14, 24.

BIBLIOGRAPHY

Bigot, J. M. F.
1892. Catalogue of the Diptera of the Oriental Region.
Journal of the Asiatic Society of Bengal, Calcutta, 61 (2): 133–236.

Barber, H. S.
1908. (Exhibit and discussion of Paraguayan "Polyctenes").
Proceedings of the Entomological Society of Washington, **9**: 11–12.

China, W. E.
1933. A new family of Hemiptera-Heteroptera with notes on the phylogeny of the suborder.
Annals and Magazine of Natural History (10) **12**: 180–196, 3 figs. 3 tables.

Costa Lima, A. da
1920. Contribuição para o conhecimento dos insectos da familia Polyctenidae.
Archivos Escola Superior de Agricultura e Medicina veterinaria, Nictheroy, **4**: 61–76, pl. XVII.
1940. Insetos do Brasil.
Escola Nacional de Agronomia. Série Didática No. 3. T. 2. Hemípteros, 351 pp., 446 figs.

Distant, W. L.
1906. Fauna of British India. Rhynchota, Volume III, Heteroptera-Homoptera. pp. xiv+503, 266 figs.
1910. Fauna of British India. Rhynchota, Volume V, Heteroptera: Appendix. pp. xii +362, 214 figs.

Ferris, G. F.
1919. Some records of Polyctenidae.
Journal of the New York Entomological Society, **27**: 261–263, pl. 24, A–D.
1930. Report upon certain ectoparasites of mammals.
In Strong, R. P. The African Republic of Liberia, **2**: 1022–1038, 13 figs.

Ferris, G. F. and R. L. Usinger
1939. The family Polyctenidae.
Microentomology, **4**: 1–50, 25 figs.
1945. Notes and Descriptions of American Polyctenidae. Pan-Pacific Entomologist, **21**: 121–124.

Giglioli, H.
1864. On some parasitical insects from China.
Quarterly Journal of Microscopical Science (new series), **4**: 18–26, pl. 1B, figs. 13, 14.

Hagen, H. R.
1931. The embryogeny of the Polyctenid, Hesperoctenes fumarius Westwood, with references to viviparity in insects.
Journal of Morphology and Physiology, **51**: 1–92, frontisp.+58 figs.

Horváth, G.
1910. Deux genres nouveaux et deux espèces nouvelles des Polycténides.
Annales Historico-Naturales Musei Nationalis Hungarici, **8**: 571–574, pl. XIV.
1911a. Les Polycténides et leur adaptation à la vie parasitaire.
Mémoires du Congrès International d'Entomologie, Bruxelles, **2**: 249–256, pl. XVIII.
1911b. A Polyctenidák biologiai alkalmazkodáza (Die biologische Anpassung der Polycteniden).
Mathematikai és Természettudomanyi Értesitö, Budapest, **29**: 103–111, 2 figs.
1911c. Miscellanea hemipterologica. Species nova Polyctenidarum.
Annales Historico-Naturales Musei Nationalis Hungarici, **9**: 336, Tab. IX, figs. 3–5.

1926. Hemipterologische notizen aus Niederländisch-Indien. Treubia, **8:** 331–332.

JORDAN, L.

1911. Polyctenidae viviparous.
Proceedings of the Entomological Society of London, p. lxiv.

1912. Contribution to our knowledge of the morphology and systematics of the Polyctenidae, a family of Rhynchota parasitic on bats.
Novitates Zoologicae, Tring, **18:** 555–579, pls. XII–XIV.

1913. On viviparity in Polyctenidae.
Transactions of the second International Congress of Entomology, Oxford, **2:** 342–350.

1922a. On a new genus and species of Polyctenidae from West Africa.
Ectoparasites, **1:** 199–203, figs. 195–198.

1922b. The American Polyctenidae.
Ectoparasites, **1:** 204–215, figs. 199–208.

KELLOGG, V. L. and J. H. PAINE

1910. A new Polyctenid.
Entomological News, **21:** 401–403, pl. XIII.

KIRKALDY, G. W.

1906a. Notes on the classification and nomenclature of the hemipterous superfamily Miroidea.
Canadian Entomologist, **38:** 369–376.

1906b. List of the genera of the Pagiopodous Hemiptera-Heteroptera.
Transactions of the American Entomological Society, **32:** 147.

MATHESON, ROBERT

1928. Notes on a small collection of bat ecto-parasites.
Parasitology, **20:** 173–174.

OSHANIN, B.

1909. Verzeichnis der palaearktischen Hemipteren. St. Petersburg, Band 1, Leiferung III, p. 612.

1912. Katalog der paläarktischen Hemipteren. Berlin. p. xvi and 187.

PHILLIPS, W. W. A.

1924. Ecto-Parasites of Ceylon Bats.
Spolia Zeylanica, **13:** 65–70.

REUTER, O. M.

1910. Neue Beiträge zur Phylogenie und Systematik der Miriden nebst einleitenden Bemerkungen über die Phylogenie der Heteropteren-Familien.
Acta Societatis Scientiarum Fennicae, 37, No. 3, 1–172, 1 tafel.

1912. Bemerkungen über mein neues Heteropterensystem.
Öfversigt af Finska Vetenskaps-Societetens Förhandlingar, Band LIV, Afd. A. No. 6, pp. 1–62.

ROTHSCHILD, N. C.

1916. Convergent development among certain ectoparasites.
Proceedings of the Entomological Society of London, Volume V, pp. cxli–clvi, 30 figs.

SCHWENCK, J.

1935. Descripção de um Hesperoctenes.
Annales de Faculdade de Medicina da Universidade de Sao Paulo, **11:** 37–42, 2 figs.

SHARP, DAVID

1899. Cambridge Natural History. Macmillan and Co., Ltd. London. VI. Insects, pt. II, pp. xii+626.

SPEISER, P.

1898. Ein neuer Fledermausparasit aus der Ordnung der Hemipteren.
Zoologischer Anzeiger, **21:** 613–615, fig.

1904. Die Hemipterengattung Polyctenes Gigl. und ihre Stellung im System.
Zoologische Jahrbucher, Supplement, **7:** 373–380, Tab. XX, figs. 1–6.

1909. The hemipterous family Polyctenidae.
Records of the Indian Museum, Calcutta, **3**: 271–274.

STILES, C. W. and M. O. NOLAN
1931. Key catalogue of parasites reported for Chiroptera (bats) with their possible public health importance.
National Institute of Health, Bulletin No. **155**: 603–742.

VAN DER WULP, F. M.
1896. Catalogue of the described Diptera from South Asia. iii+220 pp. Dutch Entomological Society. The Hague.

WATERHOUSE, C. O.
1879. On the affinity of the genus Polyctenes, Giglioli, with a description of a new species.
Transactions of the Entomological Society of London, pp. 309–312, Tab. IX.
1880. Description of a new species of the anomalous genus Polyctenes.
Transactions of the Entomological Society of London, pp. 319–320, Tab. IX.

WESTWOOD, J. O.
1874. Thesaurus Entomologicus Oxoniensis. Clarendon Press, pp. 197–199, pls. 38–40.

WU, CHENFU F.
1935. Catalogus Insectorum Sinensium.
Fan Memorial Institute of Biology, Peiping. Vol. II, pp. 1–634.

GENERAL CATALOGUE OF THE HEMIPTERA

Published in independent fascicles, each containing a family treated by a recognized specialist. Orders for single fascicles and subscriptions to the whole should be sent to the Librarian's Office, Smith College, Northampton, Mass., U. S. A.

The parts already published are as follows:

Fasc. I. Membracidae, by W. D. Funkhouser, 1927, 581 pp. Price $3.50.
Fasc. II. Mesoveliidae, by G. Horváth, 1929, 24 pp. Price $0.50.
Fasc. III. Pyrrhocoridae, by R. F. Hussey and E. Sherman, 1929, 144 pp. Price $1.50.
Fasc. IV. Fulgoroidea, Part 1. Tettigometridae, by Z. P. Metcalf, 1932, 74 pp. Price $1.00.
Fasc. IV. Fulgoroidea, Part 2. Cixiidae, by Z. P. Metcalf, 1936, 274 pp. Price $2.00.
Fasc. IV. Fulgoroidea, Part 3. Araeopidae (Delphacidae), by Z. P. Metcalf, 1943, 556 pp. Price $5.00.
Fasc. IV. Fulgoroidea, Parts 4. Derbidae, 5. Achilixiidae, 6. Meenoplidae, and 7. Kinnaridae, by Z. P. Metcalf, 1945, 256 pp. Price $2.75.
Fasc. IV. Fulgoroidea, Part 8. Dictyopharidae, by Z. P. Metcalf, 1946, 250 pp. Price $3.00.
Fasc. V. Polyctenidae, by Robert Leslie Usinger, 1946, 18 pp. Price $0.60.

Harvard MCZ Library
3 2044 066 309 428

Date Due